UNITED STATES PATENT OFFICE.

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DRILL OR BORING MEMBER.

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To all whom it may concern:

Be it known that I, HARRY J. WATTS, a subject of the King of England, residing at Turtle Creek, county of Allegheny, and State of Pennsylvania, have invented certain new and useful Improvements in Drills or Boring Members, of which the following is a specification.

This invention relates to drills or boring members designed primarily for forming polygonal shaped openings, and has for its object to provide a tool of such type, in a manner as hereinafter set forth, with eccentric end cutting edges and further with means to prevent clogging of the chips during the operation of the tool so as not to retard the movement of the latter when operating.

When drilling or boring polygonal shaped openings a master guide is employed and through which operates the tool and the latter is formed with one less land than the number of walls of the opening of the master guide through which the tool operates, and it is a further object of the invention to provide a drill or boring member with the lands thereof having the periphery curved and disposed eccentrically with respect to the axis of the tool, whereby during the operation of the tool, the eccentrically curved peripheries of the lands will follow the walls of the opening in the master guide to prevent extended or rounded corners at the junction of the walls of the polygonal shaped opening being formed in the work.

A further object of the invention is to provide a tool for the purpose set forth with a shank having means for securing it in a cylindrical or squared tool socket.

A further object of the invention is to provide a tool for the purpose referred to with grooves for the passage of chips from the opening being formed, and to further provide one of the walls of each groove at the cutting end of the tool with concavity disposed at an angle with respect to the direction of the length of the groove to cause the lifting of the chips or cuttings out of the opening being formed so as to facilitate the passage of the chips or cutting through the grooves to the point of discharge.

Further objects of the invention are to provide a tool for the purpose set forth which is simple in its construction and arrangement, strong, durable, efficient and convenient in its use, readily set up for operative purposes and comparatively inexpensive to manufacture.

With the foregoing and other objects in view the invention consists of the novel construction, combination and arrangement of parts, as hereinafter more specifically described and illustrated in the accompanying drawings, wherein is shown an embodiment of the invention, but it is to be understood that changes, variations and modifications can be resorted to which come within the scope of the claims hereunto appended.

In the drawings wherein like reference characters denote corresponding parts throughout the several views:—

Figure 1 is a perspective view looking toward the cutting end of the tool.

Fig. 2 is an elevation of the tool.

Fig. 3 is a vertical sectional view on line III—III Fig. 2.

Fig. 4 is an end view of the tool.

Fig. 5 is a section on line V—V.

Fig. 6 is a section on line VI—VI.

Referring to the drawings in detail 1 denotes a cylindrical shank which is formed integral with the body portion 2 of the tool, and said body portion 2 is of greater diameter than the shank 1.

The body portion 2 is formed with a plurality of lengthwise grooves 3, as shown three in number and which correspond to the number of cutting edges to be presently referred to. If the number of cutting edges is reduced or increased a like change is had in the number of grooves 3. These latter are employed for the discharge of the chips or cuttings from the opening being formed by the tool. The walls of each of the grooves 3 are indicated at 4, 5, and which are disposed at an angle with respect to each other. The wall 4 is at a greater angle than the wall 5 and is of less depth than the wall 5. The grooves 3 at their rear ends are curved outwardly to direct the discharge of the chips or cuttings away from the shank 1.

The forward terminus of each of the walls 5 provides a cutting edge 6 which is eccentrically disposed with respect to the axis of the body portion 2, and each of the walls 5 in proximity to its forward terminus is formed with a concavity 7 extending at an angle with respect to the groove 3 and which provides the tool with what may be termed a curved cutting lip. The function